Premier Aviation, Inc.
2621 Aviation Parkway
Grand Prairie, Texas 75052

Dwg. No. B09-63002
STC SH8443SW

FAA APPROVED

ROTORCRAFT FLIGHT MANUAL SUPPLEMENT

FOR BELL MODEL 212, 412 AND 412EP HELICOPTERS

WITH

PREMIER ENVIRONMENTAL CONTROL SYSTEM

REGISTRATION NO._____

SERIAL NO._____

This supplement must be attached to the FAA approved Bell Helicopter Models 212, 412, or 412EP Rotorcraft Flight Manuals when the Premier Environmental Control System is installed in accordance with STC SH8443SW.

The information contained herein supplements or supersedes basic flight manual only in those areas listed. For limitations, procedures, and performance information not contained in this supplement, consult the Basic Rotorcraft Flight Manual.

FAA APPROVED _____
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Federal Aviation Administration
2601 Meacham Boulevard
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FAA APPROVED:
REV C: DEC 08 1995

STC'd PRINT

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LOG OF REVISIONS

REV	DATE	PAGE(S)	DESCRIPTION	FAA APPROVED
-	09/17/92		Initial Release	
A	06/09/94	All	Changed System Name, Added ECU Control Figures. Added References to Figures In Text.	HR WHITLOCK
B	01/30/95	All	Updated to include 412EP.	James R. Arnold
C	DEC 08 1995	All	Updated to include 212.	

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DESCRIPTION:

A. GENERAL DESCRIPTION

The Premier Environmental Control System takes P3 bleed air from a fixed orifice on the PT6 Engine Compressor 11° position and directs it through the engine mounted shutoff valves to an airframe mounted pressure relief shut-off valve just forward of the left hand tail boom attach points. Temperature control thermostat inputs from the ECU Control Panel (Ref Figure 1) controls the flow of air to the Environmental Control Unit where it is cooled and then expanded in the cooling turbine. Air then enters the primary nozzle of a jet pump where recirculation across the cold side of a reheater-condenser occurs. Air that is now conditioned at a nominal range of 35° F to 170° F enters the cabin distribution system where airflow is directed by the ECU Control Panel. Fresh air may also be introduced into the cabin distribution system by the ECU Control Panel. Other system controls are located on the overhead console (Ref Figure 2).

SECTION 1 LIMITATIONS

A. The Premier Environmental Control System must be switched off during the following flight conditions.

1. Takeoff
2. Hover
3. Landing

B. Operation of the Bleed Air ECU is prohibited above Maximum Continuous Power (87.5% Torque 765°C ITT) for Model 212, (81% Torque, 765°C ITT) for standard 412, and (81% torque, 810°C ITT) for 412EP.

C. The following placards shall be on the instrument panel of this aircraft.

MODEL 212

OPERATION OF THE BLEED AIR ECU IS PROHIBITED ABOVE MAXIMUM CONTINUOUS POWER (87.5% TORQUE, 765° ITT)

OPERATION OF THE BLEED AIR ECU IS PROHIBITED FOR TAKEOFF, HOVER, AND LANDING.

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STANDARD 412

OPERATION OF THE BLEED AIR ECU IS PROHIBITED ABOVE MAXIMUM CONTINUOUS POWER (81% TORQUE, 765° ITT)

OPERATION OF THE BLEED AIR ECU IS PROHIBITED FOR TAKEOFF, HOVER, AND LANDING.

412EP

OPERATION OF THE BLEED AIR ECU IS PROHIBITED ABOVE MAXIMUM CONTINUOUS POWER (81% TORQUE, 810° ITT)

OPERATION OF THE BLEED AIR ECU IS PROHIBITED FOR TAKEOFF, HOVER, AND LANDING.

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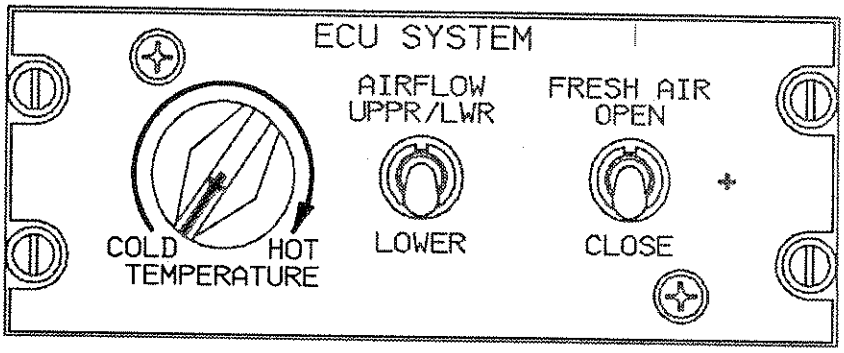

Figure 1
ECU CONTROL PANEL

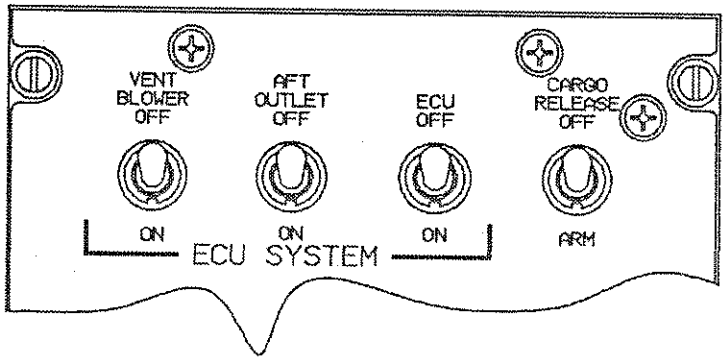

Figure 2
ECU SYSTEM CONTROLS

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SECTION II NORMAL PROCEDURES

A. PRE-START CHECK:

1. Battery Switch - **ON**
2. "AIR BLO" Circuit Breaker - **IN**
3. ECU Switch - **ON**
4. AFT OUTLET Switch - **ON**
5. Test Caution Panel for "**HEATER AIR LINE**" light illumination.
6. ECU Switch - **OFF**
7. AFT OUTLET Switch - **OFF**

B. ECU OPERATION CHECK:

1. Operational check may be accomplished at this time or at any time ECU operation is desired.
2. 100% (N2) RPM and at least 75% N1 on both engines.
3. Temperature Control Knob - **FULL HOT**
4. ECU Switch - **ON**
5. AFT OUTLET Switch - **ON**
6. Decrease Temperature control setting and observe cold airflow.
7. Return Temperature Control setting to full hot and observe ECU airflow temperature change. If airflow temperature change is observed, reset Temperature Control to desired Temperature.

CAUTION

TURN THE ECU OFF IF AIRFLOW TEMPERATURE DOES NOT CHANGE WHEN THE TEMPERATURE CONTROL IS TURNED TO FULL HOT. TURN THE ECU OFF IF THE "HEATER AIR LINE" LIGHT ILLUMINATES OR THE "AIR BLO" CIRCUIT BREAKER TRIPS

NOTE

LOSS OF EITHER ENGINE OR FAILURE OF EITHER GENERATOR WILL SHUT OFF THE ECU SYSTEM

SECTION III EMERGENCY AND MALFUNCTION PROCEDURES

A. OPERATING EMERGENCIES:

1. ECU Switch - **OFF** if any of the following emergencies occur.

   a. Fuel Control and/or Generator Failure
   b. Engine Fuel Systems Failures
   c. Helicopter Fuel System Failure
   d. Engine Air Start is to be accomplished
   e. Engine Failure on either Engine

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SECTION IV PERFORMANCE

A. Performance with the ECU switched **OFF** is the same as shown in the Basic Flight Manual.

B. Power assurance checks should be performed with the ECU **OFF**.

C. Performance with the ECU switched **ON**

1. The Bleed air ECU must be switched off for Takeoff, Hover and Landing.

2. No climb performance decrement is required when operating within the "NO PENALTY" altitude/temperature envelope (Ref Figures 3 and 5). The MCP climb decrement, (Ref Figures 4 and 6) must be applied when operating outside the "NO PENALTY" altitude temperature envelope. Use of the bleed air system when operating above Maximum Continuous Power (MCP) is Prohibited.

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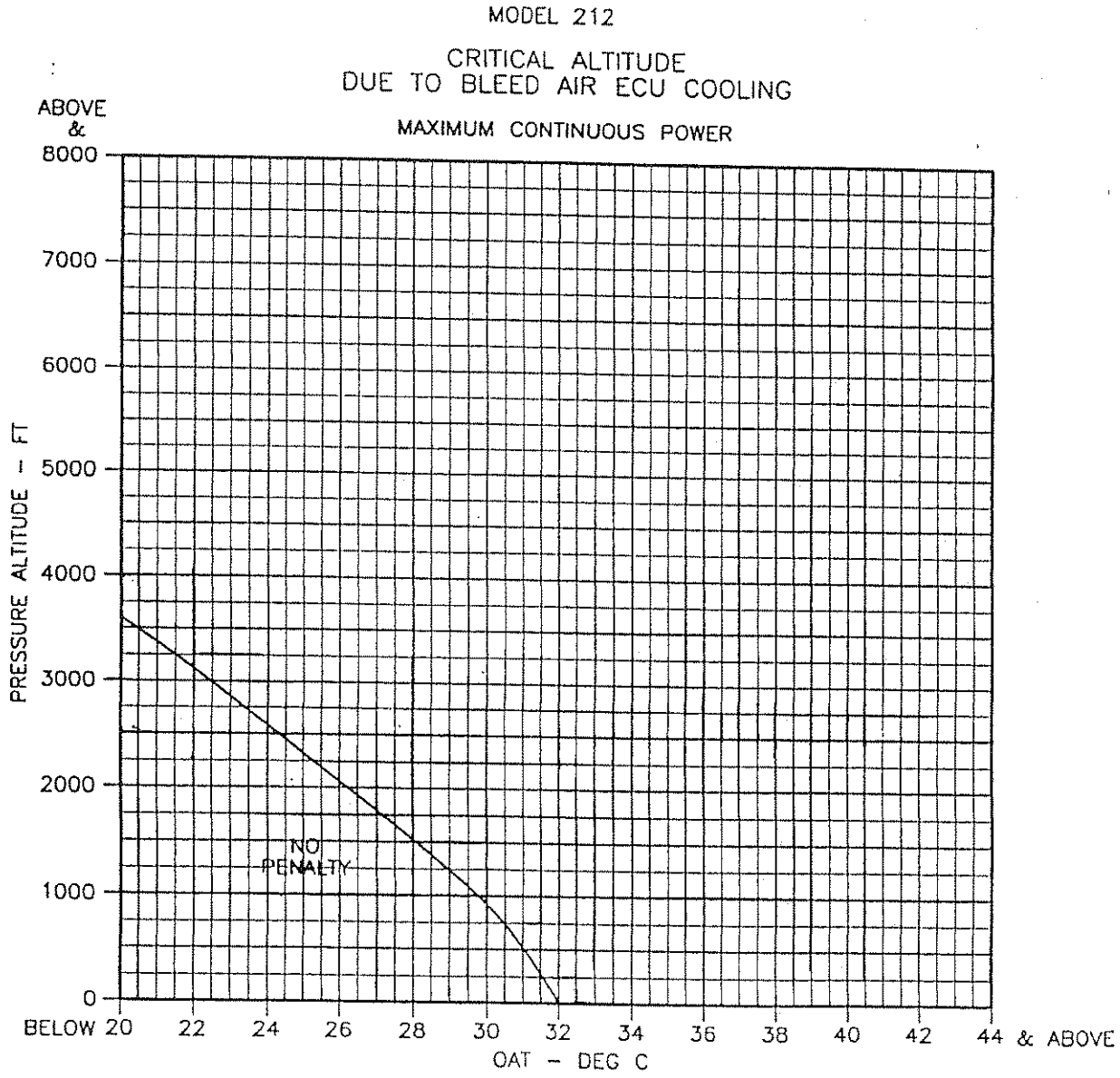

Figure 3
Critical Altitude Due To Bleed Air ECU Cooling

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MODEL 212

RATE OF CLIMB DECREASE
DUE TO BLEED AIR ECU COOLING

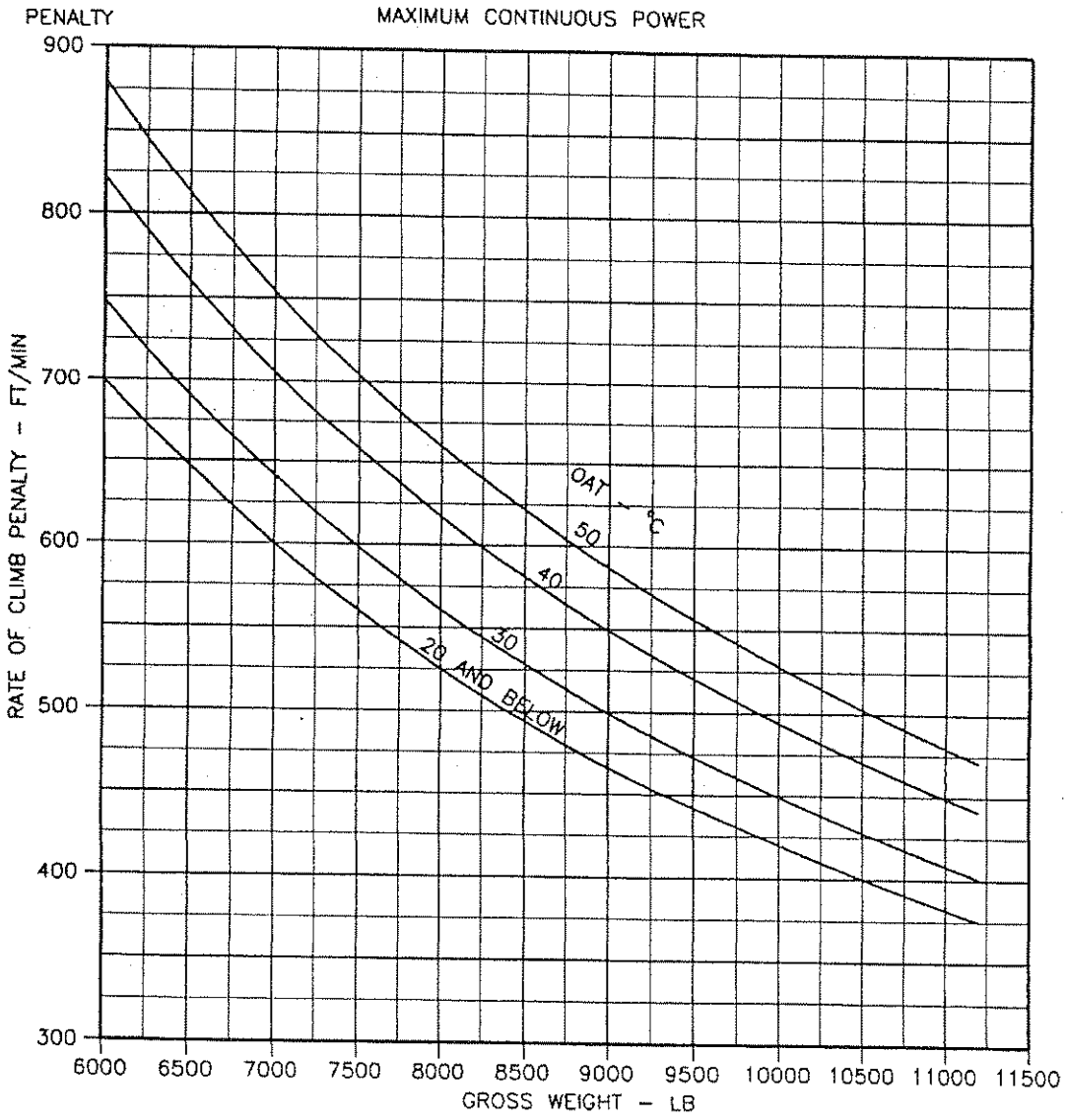

Figure 4
Rate Of Climb Decrease Due To Bleed Air ECU Cooling

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MODEL 412 & 412EP
CRITICAL ALTITUDE
DUE TO BLEED AIR ECU COOLING

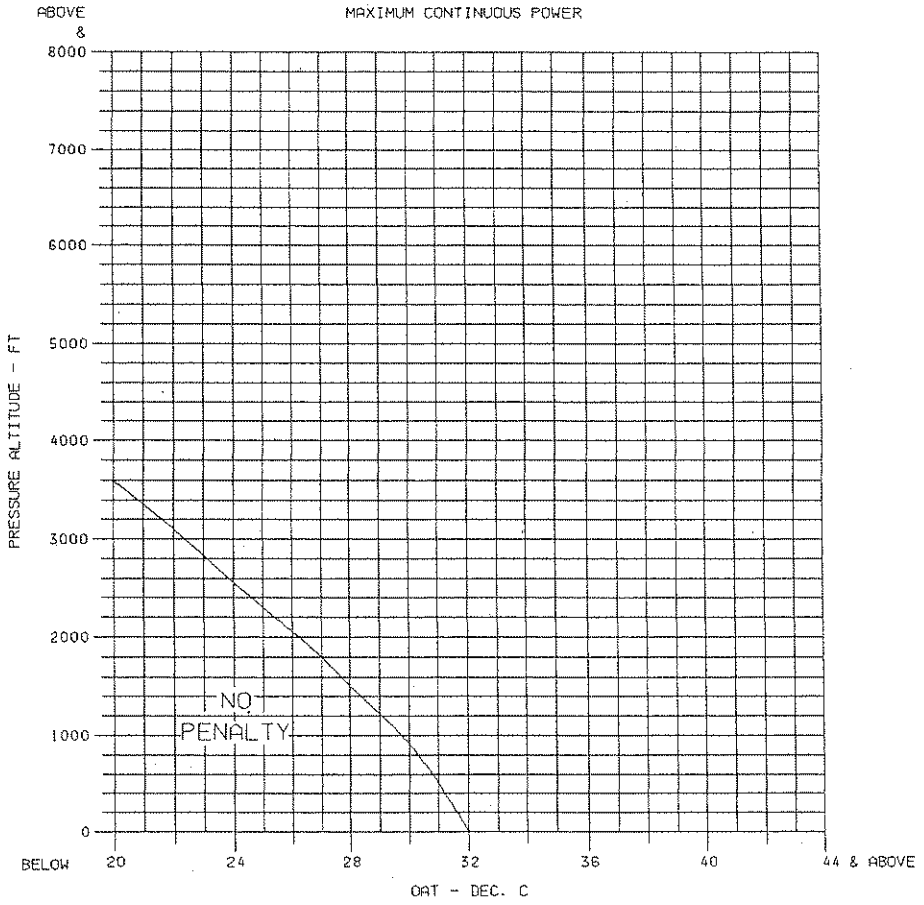

Figure 5
Critical Altitude Due To Bleed Air ECU Cooling

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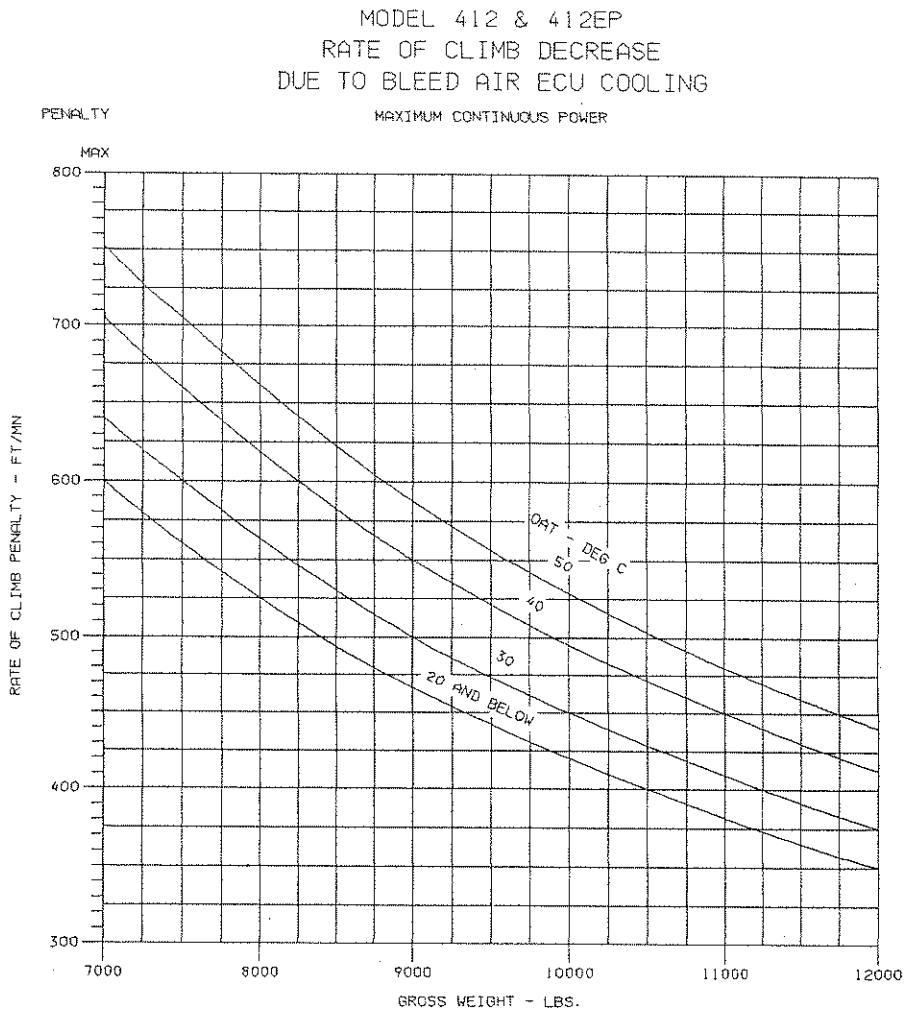

Figure 6
Rate Of Climb Decrease Due To Bleed Air ECU Cooling

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